

# Acceptance of artificial intelligence among pre-service teachers: a multigroup analysis

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## Abstract

Over the past few years, there has been a significant increase in the utilization of artificial intelligence (AI)-based educational applications in education. As pre-service teachers' attitudes towards educational technology that utilizes AI have a potential impact on the learning outcomes of their future students, it is essential to know more about pre-service teachers' acceptance of AI. The aims of this study are (1) to discover what factors determine pre-service teachers' intentions to utilize AI-based educational applications and (2) to determine whether gender differences exist within determinants that affect those behavioral intentions. A sample of 452 pre-service teachers (325 female) participated in a survey at one German university. Based on a prominent technology acceptance model, structural equation modeling, measurement invariance, and multigroup analysis were carried out. The results demonstrated that eight out of nine hypotheses were supported; perceived ease of use ( $\beta = 0.297^{***}$ ) and perceived usefulness ( $\beta = 0.501^{***}$ ) were identified as primary factors predicting pre-service teachers' intention to use AI. Furthermore, the latent mean differences results indicated that two constructs, AI anxiety ( $z = -3.217^{**}$ ) and perceived enjoyment ( $z = 2.556^*$ ), were significantly different by gender. In addition, it is noteworthy that the paths from AI anxiety to perceived ease of use ( $p = 0.018^*$ ) and from perceived ease of use to perceived usefulness ( $p = 0.002^{**}$ ) are moderated by gender. This study confirms the determinants influencing the behavioral intention based on the Technology Acceptance Model 3 of German pre-service teachers to use AI-based applications in education. Furthermore, the results demonstrate how essential it is to address gender-specific aspects in teacher education because there is a high percentage of female pre-service teachers, in general. This study contributes to state of the art in AI-powered education and teacher education.